

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Cullen *et al.* CONFIRMATION NO.: 4662
SERIAL NO.: 10/501,377 GROUP NO.: 2857
FILING DATE: December 23, 2004 EXAMINER: Tsai, Carol S W
TITLE: Electric Motor Monitoring System

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

This paper is responsive to the final Office action mailed from the U.S. Patent Office on March 17, 2008, for the above-referenced patent application. Applicants enclose a Notice of Appeal under 37 C.F.R. § 41.31 and the fee set forth in 37 C.F.R. § 41.20(b)(1). Applicants also enclose a Petition for two month Extension of Time under 37 C.F.R. § 1.136(a) and the fee set forth in 37 C.F.R. § 1.17(a).

Applicants believe that no other fee or petition is required at this time. Nevertheless, the Commissioner is hereby authorized to charge any additional required fees to Deposit Account No. 50-1721.

Remarks begin on page 2 of this paper.

Remarks

Claims 1-8, 10-13 and 15-40 are pending and presented for reconsideration.

Rejection under 35 U.S.C. § 102(b)

Claims 1-4, 7, 15, 16, 18-20, 22, 23, 27, 29, 30, 32-37, 39 and 40 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,078 to Canada *et al.* (“Canada”). Applicants arguments traversing the rejection can be found in the Applicants’ response of December 19, 2007 at pages 7 to 11.

Applicants request review because of the following errors in the final Office action of March 17, 2008:

1) The legal standard for an anticipatory reference is not satisfied by the cited reference with respect to detecting radio-frequency data from an electric motor as claimed by Applicants.

The claimed invention is directed to, *inter alia*, an electric motor monitoring system that includes an antenna and a processor. The antenna detects radio-frequency signals generated by arcing events in the electric motor and the processor then processes the detected radio-frequency signals to provide information about the operation of the motor. In practice, the radio-frequency signals, also referred to as non-inductive fields or radiated fields, are produced by sparks occurring in brush commutation within the electric motor, indicating the occurrence of an arcing event in the electric motor. As detailed on page 5, line 20 to page 8, line 4 of the application as originally filed, a number of factors are known to influence the arcing characteristics of the electric motor. Accordingly, the purpose of the claimed device is to detect and characterize such radio-frequency signals generated by an arcing event in the electric motor so as to provide a means for:

- 1) measuring a range of DC and AC electric motor/machine diagnostics including motor speed and torque;
- 2) locating and identifying electrical and mechanical faults within the electric motor; and
- 3) optimizing the alignment and monitoring the efficiency of the electrical and mechanical components of the electric motor.

The Office action cites to column 13, lines 36-44 of Canada for the proposition that Canada teaches an antenna capable of detecting a radio-frequency signal generated by an arcing event in the electric motor. However, Canada does not teach or suggest such an antenna. Instead, Canada teaches a number of sensors, e.g., sensors for detecting vibration, temperature and magnetic flux, which detect vibration data, temperature data or magnetic flux data from the electric motor. None of Canada's sensors is capable of detecting *radio-frequency signals generated by the electric motor*. Canada further teaches that the data identified by the sensors, e.g., vibration data, temperature data or magnetic flux data, can be transmitted from the sensor to a monitor by a communication port, e.g., a wireless radio frequency (RF) data link. The RF data link taught by Canada is taught as a method of communicating, or linking, the data obtained from the sensors to a monitor. Canada does not teach or even suggest that the RF data link is capable of acting as a sensor or antenna for monitoring the electric motor. Accordingly, Canada does not teach or suggest an antenna, or any other sensor, capable of *detecting* radio-frequency signals *generated by arcing events in the electric motor*, an element required by Applicants' pending claims.

Additionally, the Office action cites column 14, lines 22-33 of Canada for the proposition that Canada teaches the detection of radio-frequency signals generated by arcing events. However, none of the sensors disclosed in Canada is capable of detecting *radio-frequency signals* generated by *arcing events* in the electric motor. Instead, the passages of Canada cited in the Office action refer to sensors capable of detecting *vibration, temperature and magnetic flux*; not radio-frequency signals. Canada's *vibration* sensors detect mechanical movement. Canada's *temperature* sensors detect the temperature of the motor windings, for example, to detect winding insulation degradation. Canada's *magnetic flux* sensors detect changes in inductive magnetic fields. None of the sensors taught by Canada is capable of detecting *radio-frequency signals*, for example, radio-frequency signals generated by sparks occurring in brush commutation within electric motors and resulting in non-inductive fields or radiated fields generating radio-frequency signals.

3) The Office action's characterization of the cited reference renders the device taught by the cited reference non-functional.

If Canada's communication port were to function as Applicants' antenna, to detect radio frequency signals generated by arcing events in the electric motor, the radio frequency signals would result in significant wireless transmission interference to Canada's communication port. That interference would prevent Canada's communication port from carrying out its desired function, i.e. to provide a method for the sensor and the monitor to communicate via an IR or RF data link. Therefore, Canada actively teaches the skilled reader away from employing an antenna to measure radio-frequency signals generated by an arcing events, as required by Applicants' pending claims.

Rejections under 35 U.S.C. § 103(a)

Claims 5-6, 17, 21, 24-26, 31 and 38 stand rejected under 35 U.S.C. § 103(a) as being obvious over Canada in combination with of one of DE 003140319A1 to Lindsay *et al.*, U.S. Patent No. 5,737,026 to Lu *et al.*, U.S. Patent No. 6,701,274 to Eryurek *et al.*, or U.S. Patent No. 5,434,509 to Blades *et al.* Applicants arguments traversing the rejection can be found in the Applicants' response of December 19, 2007 at pages 11 to 14. Further, each rejection under 35 U.S.C. § 103(a) relies in part on Canada, which Applicants address above and assert is an improper anticipatory reference.

Conclusion

The rejection of the claims rests on a misunderstanding of the teachings of the Canada reference and a misapplication of the law of anticipation to the claimed invention. Canada does not teach or suggest a sensor capable of detecting radio-frequency signals generated by an arcing event in an electric motor. The rejection of the claims therefore should be withdrawn.

Accordingly, Applicants request immediate allowance of the claims. If a telephone conversation would expedite prosecution, please contact the undersigned attorney.

Respectfully submitted,

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